Be sure to read this note.

M3T-PD32R V.5.01 Release 00 Release Notes

1st Edition

Renesas Solutions Corporation

October 1, 2006

Abstract

Welcome to M3T-PD32R V.5.01 Release 00 (hereafter referred to as PD32R).

This material explains the contents of the software, installation procedure, and supplements to the manual and help. When using this software, take a look at the release note as well as the user's manual.

Also, this document contains a License Agreement in the last. Read it before using. By using the software, you are accepting and agreeing to such terms.

* You can get the latest version of this document from our homepage: (http://www.renesas.com/en/tools)

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1. Components of the Product

PD32R V.5.01 Release 00 comprises the following:

- Contents of the CD-ROM

1. PD32R installer files

The following files are installed after running the PD32R installer.

(1) Programs and files

- PD32R.EXE
- PD_LITE.EXE V. 8.50.01
- xxxxxx.dll

P32REDLL.DLL	V. 1.40.01	P32RRTOSWIN.DLL	V. 1.40.01
COMMUNI.DLL	V. 2.01.05	P32REMUWIN.DLL	V. 1.40.01
P32REGUI.DLL	V. 1.40.01	P32RRRAMWIN.DLL	V. 1.40.01
P32RCBENGINE.DLL	V. 1.40.01	MFC42.DLL	
P32REVENTSETTING.DLL	V. 1.40.01	ATL.DLL	
P32RRESOURCE.DLL	V. 1.40.01	MSVCRT.DLL	
P32RGUIIOWIN.DLL	V. 1.40.01	MSVCP60.DLL	

- M32RSDI0.S (Firmware file) V 2.01.36
- PDHELP.CHM
- PD32RDLL.DEF
- PD32R.FEF
- R.RDF, RF.RDF, RV.RDF, RX.RDF
- DEFAULT.SCK
- LOAD.SCR (The sample download script file for M32121)
- SETIP.EXE (The configuration program for the LAN interface)
- LPTFIX.EXE (The registry setup utilities for the LPT driver)

  * For details, please refer to "5.15 About using the LPT parallel interface on the host PC running Windows XP".
- PD_LITE.TLB

The following files are stored in the 'drivers' directory under the directory that has PD32R installed (eg: c:¥renesas¥pd32r¥drivers).

(a) The device drivers for the LPT interface.

(b) The device drivers for the USB interface.

File names		Windows Me/98/95	Windows XP/2000/NT
(a)	MLptDrv2.sys	-	Installed**
(b)	MUsbDrv.sys MUsbDrv.inf	Copied*	Copied *

** The installer installs the files to the system.

* The installer copies the files under the target directory. And you need to install them when you use the USB interface.

- The installer does not copy the files.

2. HTML Help Update Component
   You may need HTML Help Update Component (provided by Microsoft Co. Ltd.) to browse HTML Help Files (.CHM). If you can't open the help file for PD32R, install and update this component in your system (NOTE: You need to restart your system after installing).

- Release Note for PD32R V.5.01 Release 00 ("Software User License Agreement" included).

• If any of the above is missing, contact either Renesas Technology Corporation's office or its distributor from which you purchased the product. • Please read a License Agreement before using. By using the software, you are accepting and agreeing to such terms. • The S/W Tool User Registration Sheet is used for maintenance service for you.

2. Operating Environment

PD32R runs on the operating environments given below.

Table 1: The Host Machine Requirements

Host Machine	IBM PC/AT and its compatibles
Operating System	Windows Me Windows 98 Windows XP Windows 2000 Windows NT 4.0
CPU	Pentium 3　500MHz or higher CPU is recommended.
Memory	192MB or more system memory is recommended.

3. Installation

[Notes for Windows XP/2000/NT 4.0]

When using Windows XP/2000/NT4.0 as an operating system, make sure that the installer is executed by an authorized user as an Administrator. No one but the user with Administrator rights can install the PD32R.

3.1. Installing of PD32R

Register the PD32R to the Windows Me/98/95/XP/2000/NT4.0 by installing it to the hard disk using the installer.

1. Start of the installer
   Use the Windows Explorer to view the CD-ROM. Navigate to the "setup.exe" file in the ¥PD32R¥W95E folder, and open the file to start the PD32R installer.

2. Entering user information
   In "Customer Information" dialog box, enter customer information (License User, Belong To, Your Addresses, and PC types). Entered information becomes a format of a customer support by mail.

3. Selection of component
   In the "Select Components" dialog box, select the component to be installed. In the dialog box, installation folder can be changed.

4. End of the installer
   The installation of PD32R is completed, when the "Setup is complete" dialog box appears.

3.2. User Registration

The text file for the user registration is created to the start menu. Enter the necessary information to the text file and send it to our registration desk (regist_tool@renesas.com). To open the text file for the user registration, select the following menu:

Windows Menu [Start]->[Program]->[Renesas]->[PD32R V.5.01 Release 00]->[User Registration Sheet]

3.3. Installing of Acrobat Reader

The manual of PD32R is provided as an electronic file. Acrobat Reader is necessary to browse the electronic file. Acrobat Reader is stored in the Acrobat folder of the PD32R product disk. Install Acrobat Reader if necessary. The latest version of Acrobat Reader can be downloaded from the home page of the Adobe Systems.

URL for Adobe Systems: http://www.adobe.com/

3.4. Installing of HTML Help Update Component

The Help for PD32R is provided as HTML Help file. Internet Explorer 4.0 or later is necessary to browse HTML Help files.

If you can't browse HTML Help files, you need install Internet Explorer 4.0 or later, HTML Help Update Component, or both of them.

HTML Help Update Component (HHUPD.EXE) is stored in the "Utility" folder, which is created within the folder that PD32R is installed (eg:c:¥renesas¥pd32r¥Utility¥Hhupd.exe). Install it if necessary. The latest version of this component can be downloaded from the home page of Microsoft Co. Ltd.

URL for MSDN: http://msdn.microsoft.com/

4. Technical Support

4.1. Technical support by E-mail

The text file for the technical support is created based on the information provided at installation. Write your inquiry in it and send it to our technical support (support_tool@renesas.com). To open the text file for technical support, select the following menu:

Windows Menu [Start]->[Program]->[Renesas]->[PD32R V.5.01 Release 00]->[Technical Support Sheet]

[Notes on technical support]

We designate the types of host machines (IBM PC/AT and compatibles, for example) as an operation environment for using our software tools. This does not guarantee operation of the host machines of any kind or in any environment (such as device drivers, peripheral units, etc.), but merely for indicating an operation environment we assume (to be put to our support). If a trouble should occur in using the software tools in the operation environment we designate, we offer a technical support to solve the trouble (defective correction and information for avoiding the trouble, and so forth).

If a trouble that occurred in your environment cannot be reproduced in our operation environment, we may ask your cooperation (we may borrow your equipment with your approval). We would like your prior approval.

4.2. Technical support by Homepage

Our homepage in the following URL provides datasheets, toolnews, FAQ and the other various information of our products.

Home Page: http://www.renesas.com/en/tools

Another access is:

Windows Menu [Start]->[Program]->[Renesas]
-> [(Link Page for) RENESAS Tools HomePage]

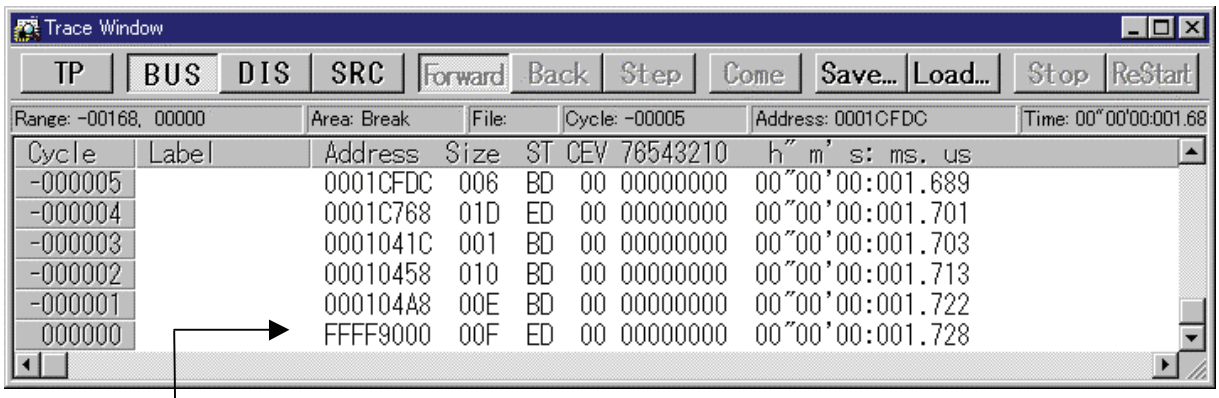
5. Notes

5.1. Analysis of real time trace results

When the trace type is Branch, observe the following restriction on the result of real time trace, depending on the setup condition or the occurred breakpoint setting.

- When tracing up to the time point when the breakpoint occurs
  When the real time trace result is displayed in the bus mode, the trace data at occurrence of the breakpoint is listed as below. The trace data at Address: FFFF9000 indicates that a break function has occurred. It does not indicate an occurrence of branch caused by the user program.

Trace data indicating break occurrence



The trace data at Address: FFFF9000 indicates that a break function has occurred.

For the bus mode display, Address, ST and other fields, see the PD32R Help.

5.2. Zone time measurement error

The zone time measurement function is implemented based on the trace data output from the MCU. To output a unit of trace data information, the MCU operation clock frequency count shown below is required. Thus, the zone time measurement result generates a measurement error from the actual MCU execution time.

A unit of trace data refers to the following information:

(a) Single branch information arising during program execution
(b) Single data access information

According to the trace mode setting, the trace data output from the MCU are described below:

Trace Mode Setting	Trace Data Output from MCU
Branch	(a) Only branch information
Data	(b) Only data access information
Mix(Branch Priority)	(a)Branch information and (b) Data access information
Mix(Data Priority)	(b)Branch information and (b) Data access information

- Clock count required to output a unit of information

Emulator model, Patterns of connection			M32100T-SDI-E or M32170T-SDI	M32100T2-SDI-E	
				When M32xxxT2-PTC is not used	When M32xxxT2-PTC is used
MCU group	MCU operation frequency	A unit of information outputted - (a) Branch information (b) Data access information	Number of trace output clocks	Number of trace output clocks	Number of trace output clocks
32102	-	(a)	12		
		(b)	18		
M32Rx/D	-	(a)	12		
		(b)	18		
32121	-	(a)	6		
		(b)	9		
3217x	-	(a)	6		
		(b)	9		
3218x	MCU clock <= 66MHz	(a)	6		
		(b)	9		
	MCU clock > 66MHz	(a)	12		6
		(b)	18		9
32104	MCU clock <= 66MHz	(a)	6		
		(b)	9		
	66MHz < MCU clock <= 108MHz	(a)	12		6
		(b)	18		9
	108MHz < MCU clock <= 132MHz	(a)	12		
		(b)	18		
	MCU clock > 132MHz	(a)	24		12
		(b)	36		18
3219x	MCU clock <= 66MHz	(a)		6 (max)	
		(b)		9 (max)	
	66MHz < MCU clock <= 108MHz	(a)		12 (max)	6 (max)
		(b)		18 (max)	9 (max)
	108MHz < MCU clock <= 132MHz	(a)		12 (max)	
		(b)		18 (max)	
	MCU clock > 132MHz	(a)		24 (max)	12 (max)
		(b)		36 (max)	18 (max)

The zone time measurement error shown below is generated when Branch, Data or Trigger is specified for the event setup function -- one of the zone time measurement functions. If Chip Event is specified for the event setup function, no measurement error occurs.

- Time measurement error (clock count required to output a unit of information x 2)

Emulator model, Patterns of connection			M32100T-SDI-E or M32170T-SDI	M32100T2-SDI-E	
				When M32xxxT2-PTC is not used	When M32xxxT2-PTC is used
MCU group	MCU operation frequency	A unit of information outputted - (a) Branch information (b) Data access information	Number of time measurement error clocks	Number of time measurement error clocks	Number of time measurement error clocks
32102	-	(a)	24		
		(b)	36		
M32Rx/D	-	(a)	24		
		(b)	36		
32121	-	(a)	12		
		(b)	18		
3217x	-	(a)	12		
		(b)	18		
3218x	MCU clock <= 66MHz	(a)	12		
		(b)	18		
	MCU clock > 66MHz	(a)	24		12
		(b)	36		18
32104	MCU clock <= 66MHz	(a)	12		
		(b)	18		
	66MHz < MCU clock <= 108MHz	(a)	24		12
		(b)	36		18
	108MHz < MCU clock <= 132MHz	(a)	24		
		(b)	36		
	MCU clock > 132MHz	(a)	48		24
		(b)	72		36
3219x	MCU clock <= 66MHz	(a)		12 (max)	
		(b)		18 (max)	
	66MHz < MCU clock <= 108MHz	(a)		24 (max)	12 (max)
		(b)		36 (max)	18 (max)
	108MHz < MCU clock <= 132MHz	(a)		24 (max)	
		(b)		36 (max)	
	MCU clock > 132MHz	(a)		48 (max)	24 (max)
		(b)		72 (max)	36 (max)

5.3. Zone time measurement event

Setup of zone time measurement events has the following restrictions:

- When the same event is set for the start and end events, 1/2 of the event occurrence count will be a measurement result.
- Set the start event and end event at interval of more than 200 ns in-between.

5.4. Event setup

When setting an event in the state transition chart in the H/W Break Point Setting Window or Trace Point Setting Window, observe the following restriction:

- If you specify a chip event and another event under other condition within the event assignment button, the relation of occurrence time may be inverted, which will cause the system to fail to correctly recognize the event to be specified in the state transition chart. To mix designation of these events, occurrence of each event requires interval longer than the time measurement error given in "5.2 Zone time measurement error".

5.5. Precautions on download (1)

When one of the following applies, the target microcomputer is reset, and the registers which sets the memory wait count and clock frequency are initialized.

(1) Immediately after the PD32R gets started

(2) When pressing the RESET button on the PD32R (or when executing the Reset instruction)

(3) When downloading is completed (when the reset operation is enabled after downloading)

You can select the reset operation after downloading by using the "Download Behavior tab" in the Init dialog box. For details, see the "Setup" section in the PD32R Help.

If you try to download the target program in such a state, the download speed may drastically become slow. It is highly recommended that you should download the target program after setting the memory wait count and clock frequency.

The following shows an example to download the program to the flash memory built in the target microcomputer M32121.

When using a target microcomputer of other model, set the parameters referring to the given example.

(Example: When using M32121)

Set the parameters to the register using the PD32R memory rewrite function.

Register	Address	Access size	Setting value	Setting data
Built-in ROM wait control register	H'FFFFC023	Byte	H'00	Built-in ROM wait count 0
Clock mode register	H'00F74000	Word	BCLKSEL=B'0000	System clock f (XIN)

The PD32R script instruction executes the following:

```
MB FFFC023, 0
MW 00F74000, 0
```

A script file LOAD.SCR in which the above data is described is attached.

Immediately after starting PD32R, it is automatically executed by specifying "Init File" on "Resume tab" in "Init" dialog.

Download speed to the built-in flash memory is influenced by the setting data in the register above (built-in ROM wait control register/clock mode register).

To download a target program to an external device, be sure to set the parameters of the built-in chip select controller before starting downloading.

And, if you use microcomputer with a data caching function, you have to disable the function before downloading a program.

5.6. Precautions on Debugging

5.6.1. When using CC32R

- If the target program contains multiple object files with the same file name, debug information on those objects cannot be handled correctly.
- Variables that are named "bool" can be referred neither with C Watch Window nor with print command in Script Window.

5.6.2. When using D-CC

- If the target program has typedef declarations internally used, pay attention to the following:
  (1) When displaying type definition names, respective tag names are displayed.
  (2) When using type definition names to write C language expressions, be sure to use respective tag names.

5.6.3. Common precautions

- In the first line of a function, the stack frame for the function is not fully formed. When referencing function parameters or auto variables, execute as many lines in the function as can be executed.
- If a variable is declared with the same name as the type definition name declared by typedef, you cannot reference that variable.

5.7. Precautions when using TW32R (V.1.00 Release 1 to V.3.00 Release 1)

When you are using TW32R version from V.1.00 Release 1 to V.3.00 Release 1, the program header information of the load module created by the linker may not be correctly generated. This may cause a problem that a part of the section cannot be correctly downloaded by the emulator debugger.

[Condition which triggers this problem]

It has been proved that the problem occurs when a linker script is described where the relationship between the section execution address (VMA) and the load address (LMA) meets the two conditions given below. In the following example, section .secB is not downloaded correctly.
(1) Any three sections are allocated to the continuous load addresses (LMA) (Figure A).
(2) Only the execution address (VMA) of the section allocated in the middle (.secB) is allocated to the low address (Figure B).

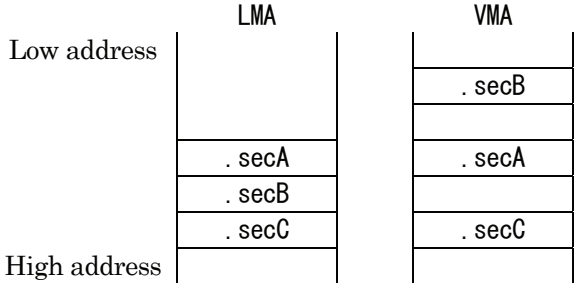


Figure A Figure B

[Corrective action]

Try one of the following methods:

(1) Changing the section allocation sequence

When allocating the load address (LMA) of each section, change the linker script description so that a section whose execution address (VMA) is allocated to low address (.secB) will not be placed between the sections whose execution address is the same as the load address (.secA, .secC).
For example, change the section allocation sequence as shown in Figure C and Figure D.

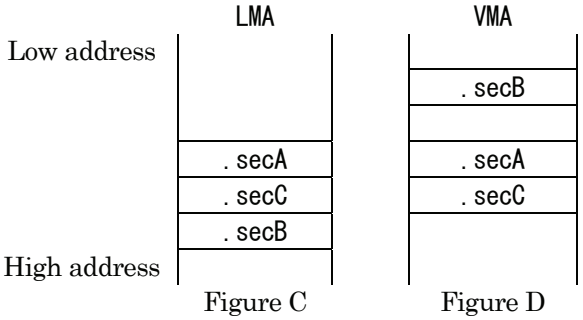


Figure C Figure D

(2) Creating a program header using the PHDRS instruction

As shown in the following example, change the linker script.
Then, the system will create the program header for each section.

[1] In each section definition, define the name to be referenced in the PHDRS instruction. Be sure to select the different name for each section. The defined name is used to be identified in the PHDRS instruction. You can specify any name. (It could be the same as the symbol name,

file name or section name.) However, you cannot specify an instruction name (NETRY, STARTUP) for the name.
[2] Use the name defined in [1] to define the program header using the PHDRS instruction so that all the sections will be used as individual segments.

```
------------------------------------------------------
/* [2] */
PHDRS
{
   secA PT_LOAD;
   secB PT_LOAD;
   secC PT_LOAD;
}
.secA  Execution address : Load address
{
   ...
} :secA     /* [1] */
.secB  Execution address : Load address
{
   ...
} :secB     /* [1] */
.secC  Execution address : Load address
{
   ...
} :secC     /* [1] */
------------------------------------------------------
```

5.8. Changing memory contents of an external flash ROM area

Memory contents of an external flash ROM area can only be changed during download processing. The memory contents of this area cannot be changed by operating directly on memory. Here, the external flash ROM area refers to one that was registered from the "Init" dialog box using its Target Dependence Memory setup page.

5.9. About the scope

The scope setting function is available only when the compiler CC32R is used. When D-CC or TW32R is used, the scope setting function is unavailable.

5.10. About watching the local C variables

For the sake of optimization, the C compiler may place different variables at the same address. In this case, values of the C variable may not be displayed correctly on the c watch window or other function.

5.11. Precautions on debugging functions in the external and extended external areas

The following debugging functions may not properly be performed in the external and extended external areas:

(a) Storing target program to memory after downloading

(b) Rewriting memory

This problem occurs if the following three conditions are satisfied:

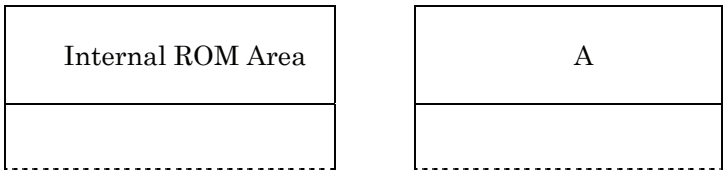
(1) The target MCU belongs to any of the following MCU groups:

* the 3212x groups
* the 3217x groups
* the 3218x groups
* the 3219x group

(2) The chip operation mode of the target MCU is either of the following:

* processor mode
* MPU mode

(3) The external or extended external area concerned overlaps with the internal ROM area, as denoted by A in the memory map below.



Memory map figure

5.12. About Custom function using CB32R

PD32R V.4.00 and later versions does not include CB32R. If you want to create custom windows, please use the custom function using COM interface. The custom windows and custom commands, which are created by CB32R attached with PD32R V.3.00, are executable in PD32R V.4.00 or newer version.

5.13. About using cast operators for the member variable

When you use cast operators for the member variable to refer to it as the pointer of the structure, you would not refer to it correctly.

5.14. On the break function using the pre-execution PC break

[Description]

When the pre-execution PC break is used as an event of a breakpoint, the break function may not be performed properly.

[Conditions]

This problem occurs if the following four conditions are satisfied:

(1) The target MCU belongs to any of the following groups:
32170, 32171, 32172, 32173, 32174, and 32176

(2) The pre-execution PC break is used as an event of a breakpoint.

(3) The pre-execution PC break is used as an event of a chip event.

(4) The breakpoint and the chip event in (2) and (3) above are set at the same address.

[Example]

If the target program is started with a breakpoint being set in the procedure shown below, no program break occurs when the instruction at the specified address (1000H, for example) is executed:

(1) Open the Program window and double-click the mouse's left button in the area for setting a breakpoint at address 1000H. A breakpoint is set at that address. In Single Chip and External Expansion Modes of the M3217x group, address 1000H is within the internal ROM area, so the pre-execution PC break is used as a breakpoint and "b"s are displayed in the breakpoint display area.

(2) Follow these steps in the Trace-point setting window:
1. Click the CE0 button in the Set Chip Event area. The CE0-Set Chip Event dialog box appears.
2. Perform the following in the CE0-Set Chip Event dialog box:
2.1 Check the Enable check box.
2.2 Select "Preexe-PC 0" in the Event Type combo box.
2.3 Type H'1000 in the Address text box.
2.4 Click the OK button.
3. Click the Set button.

[Workaround]

Don't set a breakpoint and a chip event that use the pre-execution PC break as their events at the same address.

5.15. About using the LPT parallel interface on the host PC running Windows XP

When you debug programs using the LPT parallel interface on the host PC running Windows XP, the following symptoms may appear:

1. The debugger becomes frozen.
2. The debugger's operation gets extraordinarily slower.
3. Communication errors arise and the emulator debugger stops operating.
4. Various types of errors other than communication errors also take place successively. In this case, the emulator debugger continues operating however.

The cause of this problem is that if the debugger is invoked while the standard driver Parport.sys of Windows XP is communicating with the LPT port, the debugger is unable to communicate with the emulator.
Then, this problem can be circumvented in either of the following methods; however, you need to take no measures if you have not experienced it in your PC under the above-mentioned conditions:

(a) Execute the problem-fixing LptFix.exe file as follows (NOTICE 1):
   (1) The LptFix.exe file is stored in a location below the directory where the PD32R is installed (e.g., c:¥renesas¥PD32R¥utility).
   (2) Invoke the command prompt of Windows XP by selecting the Start -> Program -> Accessory -> Command Prompt command and move to the folder where the LptFix.exe file resides.
   (3) Enter the following command on the command line:
   >LptFix
   Here > denotes a command prompt.
   (4) Restart the PC.

   NOTICES:
   1. Executing the LptFix.exe disables the Parport.sys driver. Then, if any device other than the emulator is connected to the LPT port after LptFix.exe is executed, the device may not operate properly. In such a case you are encouraged to adopt method (b) shown later.
   2. If LptFix.exe is executed, be sure to make it ineffective to enable the Parport.sys driver as explained below, every time after ending debugging operations and disconnecting the emulator.

   To make LptFix.exe ineffective to enable Parport.sys, go through the following steps:
   (1) Invoke the command prompt and move to the folder where the LptFix.exe file resides.
   (2) Enter the following command on the command line:
   >LptFix /U
   (3) Restart the PC.

(b) If you launch the emulator for the first time after starting the PC, invoke the debugger one or more minutes after the emulator starts operating. Otherwise, you can invoke the debugger immediately after the emulator has started.

6. Supplements of User's Manual

6.1. MCU file list provided with the PD32R product

MCU files provided with PD32R V.5.01 Release 00 are listed below.
Use the MCU file corresponding to your emulator system.

For the 32102 group

MCU file name	Emulator model	MCU
32102.mcu	M32100T2-SDI-E M32100T-SDI-E M32170T-SDI	M32102S6FP

For the 32104 group

MCU file name	Emulator model	MCU
32104.mcu	M32100T2-SDI-E M32100T-SDI-E M32170T-SDI M32100T2-SDI-E + M32104T2-PTC M32100T-SDI-E + M32104T2-PTC M32170T-SDI + M32104T2-PTC	M32104S6FP M32104S6WG

For the 32121 group

MCU file name	Emulator model	MCU
32121.mcu	M32100T2-SDI-E M32100T-SDI-E M32170T-SDI	M32121FCWG

For the 32170 group

MCU file name	Emulator model	MCU
32170.mcu	M32100T2-SDI-E M32100T-SDI-E M32170T-SDI M32100T2-SDI-E + M32170T-PTC M32100T-SDI-E + M32170T-PTC M32170T-SDI + M32170T-PTC	M32170F3VFP M32170F4VFP M32170F6VFP

For the 32171 group

MCU file name	Emulator model	MCU
32171.mcu	M32100T2-SDI-E M32100T-SDI-E M32170T-SDI M32100T2-SDI-E + M32171T-PTC M32100T-SDI-E + M32171T-PTC M32170T-SDI + M32171T-PTC	M32171F2VFP M32171F3VFP M32171F4VFP

For the 32172 group

MCU file name	Emulator model	MCU
32172.mcu	M32100T2-SDI-E M32100T-SDI-E M32170T-SDI M32100T2-SDI-E + M32173T-PTC M32100T-SDI-E + M32173T-PTC M32170T-SDI + M32173T-PTC	M32172F2VFP

For the 32173 group

MCU file name	Emulator model	MCU
32173.mcu	M32100T2-SDI-E M32100T-SDI-E M32170T-SDI M32100T2-SDI-E + M32173T-PTC M32100T-SDI-E + M32173T-PTC M32170T-SDI + M32173T-PTC	M32173F2VFP M32173F2VWG

For the 32174 group

MCU file name	Emulator model	MCU
32174.mcu	M32100T2-SDI-E M32100T-SDI-E M32170T-SDI M32100T2-SDI-E + M32170T-PTC M32100T-SDI-E + M32170T-PTC M32170T-SDI + M32170T-PTC	M32174F3VFP M32174F4VFP

For the 32176 group

MCU file name	Emulator model	MCU
32176.mcu	M32100T2-SDI-E M32100T-SDI-E M32170T-SDI M32100T2-SDI-E + M32170T-PTC M32100T-SDI-E + M32170T-PTC M32170T-SDI + M32170T-PTC	M32176F2VFP/TFP M32176F2VWG/TWG M32176F3VFP/TFP M32176F3VWG/TWG M32176F4VFP/TFP M32176F4VWG/TWG

For the 32180 group

MCU file name	Emulator model	MCU
32180.mcu	M32100T2-SDI-E M32100T-SDI-E M32170T-SDI M32100T2-SDI-E + M32180T2-PTC M32100T-SDI-E + M32180T2-PTC M32170T-SDI + M32180T2-PTC	M32180F8TFP/VFP M32180F8VWG

For the 32182 group

MCU file name	Emulator model	MCU
32182.mcu	M32100T2-SDI-E M32100T-SDI-E M32170T-SDI M32100T2-SDI-E + M32182T2-PTC M32100T-SDI-E + M32182T2-PTC M32170T-SDI + M32182T2-PTC	M32182F3TFP/VFP M32182F8TFP/VFP

For the 32185 group

MCU file name	Emulator model	MCU
32185.mcu	M32100T2-SDI-E M32100T-SDI-E M32170T-SDI M32100T2-SDI-E + M32186T2-PTC M32100T-SDI-E + M32186T2-PTC M32170T-SDI + M32186T2-PTC	M32185F4VFP

For the 32186 group

MCU file name	Emulator model	MCU
32186.mcu	M32100T2-SDI-E M32100T-SDI-E M32170T-SDI M32100T2-SDI-E + M32186T2-PTC M32100T-SDI-E + M32186T2-PTC M32170T-SDI + M32186T2-PTC	M32186F8VFP

For the 32192 group

MCU file name	Emulator model	MCU
32192.mcu	M32100T2-SDI-E M32100T-SDI-E M32170T-SDI M32100T2-SDI-E + M32192T2-PTC M32100T-SDI-E + M32192T2-PTC M32170T-SDI + M32192T2-PTC	M32192F8TFP/UFP/VFP M32192F8VWG/UWG/TWG

For the 32195 group

MCU file name	Emulator model	MCU
32195.mcu	M32100T2-SDI-E M32100T-SDI-E M32170T-SDI M32100T2-SDI-E + M32192T2-PTC M32100T-SDI-E + M32192T2-PTC M32170T-SDI + M32192T2-PTC	M32195F4VFP/UFP/TFP

For the 32196 group

MCU file name	Emulator model	MCU
32196.mcu	M32100T2-SDI-E M32100T-SDI-E M32170T-SDI M32100T2-SDI-E + M32192T2-PTC M32100T-SDI-E + M32192T2-PTC M32170T-SDI + M32192T2-PTC	M32196F8VFP/UFP/TFP

For the 32310 group

MCU file name	Emulator model	MCU
32310.mcu	M32310T-SDI-E	M32310D5XX
32310_MPU.mcu		

(Note) Usually, use 32310.mcu.

For the 32910 group

MCU file name	Emulator model	MCU
32910.mcu	M32120T-SDI for M32920	M32920

(Note)

When PD32R is installed, these MCU files are stored under "MCUfiles" folder, which is created within the folder that contains PD32R.EXE.

6.2. List of flash device definition files (FDD files) provided with the PD32R package

Before the target program can be downloaded into an external flash area, a flash target definition file (FTD file) must be registered from the "Init" dialog box using its Target Dependence Memory tab.

This FTD file can be created using the FDD files provided with the PD32R package. To create an FTD file, select Flash ROM for Type: on the "Init" dialog box's Target Dependence Memory tab and click the Create button to open the "External Flash ROM Define" dialog box. Use this dialog box to create an FTD file. When working on this dialog box, be sure to use the FDD file that suits the flash device used.

The table below lists the currently supported flash device type names and the flash device definition files (FDD files) provided with PD32R V.5.01 Release 00.

(Notes)

1. To download the target program into an external flash area, check to be sure that it can be read from and written into the flash memory. After that, download the target program into an external flash area.
2. The operations of some flash memory are not verified due to patterns of connection.

FDD files for Atmel flash devices

FDD file name	Flash device type name (not including the package shape)	Remarks
AT49BV1614.FDD	AT49BV1614	

FDD files for Fujitsu flash devices

FDD file name	Flash device type name (not including the package shape)	Remarks
MBM29BL160D.FDD	MBM29BL160D	
MBM29BL161D.FDD	MBM29BL161D	
MBM29BL162D.FDD	MBM29BL162D	
MBM29DL16XBE.FDD	MBM29DL16XBx	x : 1, 2, 3, 4
MBM29DL16XTE.FDD	MBM29DL16XTx	x : 1, 2, 3, 4
MBM29DL32XBE.FDD	MBM29DL32XBx	x : 1, 2, 3, 4
MBM29DL32XTE.FDD	MBM29DL32XTx	x : 1, 2, 3, 4
MBM29DL640E.FDD	MBM29DL640x	
MBM29F400BC.FDD	MBM29F400Bx	
MBM29F400TC.FDD	MBM29F400Tx	
MBM29F800BA.FDD	MBM29F800Bx	
MBM29F800TA.FDD	MBM29F800Tx	
MBM29LV160BE.FDD	MBM29LV160Bx	
MBM29LV160TE.FDD	MBM29LV160Tx	
MBM29PL160BD.FDD	MBM29PL160Bx	
MBM29PL160TD.FDD	MBM29PL160Tx	
MBM29PL3200BE.FDD	MBM29PL3200Bx	available only when DW/$\overline{\text{W}}$# pin's logic level is low
MBM29PL32TE.FDD	MBM29PL32Tx	
MBM29PL32BE.FDD	MBM29PL32Bx	
MBM29PL65LM.FDD	MBM29PL65LM	
MBM29LV800BA.FDD	MBM29LV800Bx	
MBM29LV800TA.FDD	MBM29LV800Tx	
MBM29LV320BE.FDD	MBM29LV320Bx	
MBM29LV320TE.FDD	MBM29LV320Tx	
MBM29LV640UE.FDD	MBM29LV640Ux	

FDD files for Intel flash devices

FDD file name	Flash device type name (not including the package shape)	Remarks
E28F016SV.FDD	E28F016SV	
E28F320J5.FDD	E28F320J5	
E28F640J5.FDD	E28F640J5	

FDD files for Renesas flash devices

FDD file name	Flash device type name (not including the package shape)	Remarks
M5M29FB160.FDD	M5M29FB160	
M5M29FT160.FDD	M5M29FT160	
M5M29GB320.FDD	M5M29GB320	
M5M29GT320.FDD	M5M29GT320	
M5M29KB331.FDD	M5M29KB331	available only when WP# pin's logic level is high
M5M29KT331.FDD	M5M29KT331	
M5M29KB331_WP.FDD	M5M29KB331	available only when WP# pin's logic level is low
M5M29KT331_WP.FDD	M5M29KT331	
M5M29KB641AVP.FDD	M5M29KB64	available only when WP# pin's logic level is high
M5M29KT641AVP.FDD	M5M29KT641	

FDD files for Toshiba flash devices

FDD file name	Flash device type name (not including the package shape)	Remarks
TC58FVB160.FDD	TC58FVB160	

FDD files for Macronix flash devices

FDD file name	Flash device type name (not including the package shape)	Remarks
MX29LV160B.FDD	MX29LV160B	
MX29LV160T.FDD	MX29LV160T	
MX29LV320B.FDD	MX29LV320B	
MX29LV320T.FDD	MX29LV320T	
MX29LV800T.FDD	MX29LV800T	
MX29LV800B.FDD	MX29LV800B	
MX26L6420.FDD	MX26L6420	

FDD files for SPANSION flash devices

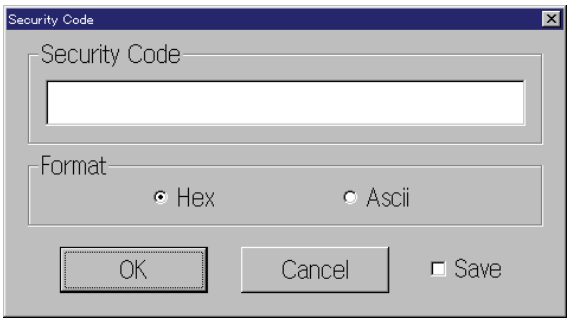
FDD file name	Flash device type name (not including the package shape)	Remarks
S29GL128N.FDD	S29GL128N	
S29GL256N.FDD	S29GL256N	
S29PL032J.FDD	S29PL032J	
S29PL064J.FDD	S29PL064J	

(Note)

When PD32R is installed, these FDD files are stored under "FddFiles" folder, which is created within the folder that contains PD32R.EXE.

6.3. Security code check function

When starting PD32R in which a security code is stored, the following dialog appears. Enter the security code here. If the entered security code does not match the stored one, PD32R will not get started until the data in the built-in flash memory is deleted.



Enter the security code in the edit box.
Select the security code format by using a radio button in the Format group.
When checking the Save check box, the entered security code is saved.
When you try to start PD32R at next time, the system uses the saved security code to verify conformance to the stored security code.

6.4. Setting a breakpoint in the Program/Source Window

When you try to set a breakpoint in the Program/Source Window at an write-protected area, a pre-execution PC breakpoint is set.

6.5. Display value of breakpoint display/setting area in the Program/Source Window

In the breakpoint display/setting area in the Program/Source Window, "b" is displayed when a pre-execution PC breakpoint has been set, and "p" is displayed when a post-execution PC breakpoint has been set.
If a software breakpoint, hardware breakpoint (instruction branch), a pre-execution PC breakpoint and a post-execution PC breakpoint are set at the same address, "ALL" is displayed in the breakpoint display/setting area in the Program/Source Window.

7. Version Report

This section describes the changes in the specification.

7.1. PD32R V.5.01 Release 00

In this version, the following changes have been made to the previous version PD32R V.5.00 Release 00.

7.1.1. Revisions of Restrictions

- A limitation has been corrected: If a mixed representation of source and disassembled code is saved on a text file, a part of the disassembled code may not be saved on the file.
  (for details, refer the RENESAS TOOL NEWS, June 16, 2006 (RSO-M3T-PD32RM-060616D))
- A limitation has been corrected: When structure member variables, union member variables, or class member variables are displayed in such a window as the C Watch window, which is capable of referencing variables, a message may appear saying "not active", resulting in no variables being referenced.
  (for details, refer the RENESAS TOOL NEWS, January 16, 2006 (RSO-M3T-PD32RM-060116D))

7.1.2. Extended Functions and Modified Specifications

- Window-related Functions
  - Debugging Information tab of Init Dialog Box
    - Unsupported compiler Green Hills M32R has been unavailable on the Compiler's list box.
- Others
  - The following MCU-files have been added.

32185.mcu	32186.mcu	32195.mcu	32196.mcu

7.2. PD32R V.5.00 Release 00

In this version, the following changes have been made to the previous version PD32R V.4.10 Release 1.

7.2.1. Revisions of Restrictions

- A limitation has been corrected: In the C Watch window, expanding a global variable in a structure, a union, or an array of structures or unions may cause the emulator debugger to terminate unsuccessfully.
  (for details, refer the RENESAS TOOL NEWS, September 1, 2004 (RSO-M3T-PD32RM-040901D))
- A limitation has been corrected: If structures, unions, classes, arrays, and pointers are expanded, the emulator debugger may hang up.
  (for details, refer the RENESAS TOOL NEWS, August 1, 2004 (RSO-M3T-PD32RM_1-040801D))
- A limitation has been corrected: Using the SetIp.exe file included with the product may not set an IP address and others in the emulator.
  (for details, refer the RENESAS TOOL NEWS, June 1, 2004 (RSO-M3T-PD308F-040601D))

7.2.2. Extended Functions and Modified Specifications

- Renesas C/C++ Compiler for M32R Family Support
  PD32R newly supports ELF/DWARF2 format from M3T-CC32R, the Renesas C/C++ Compiler for M32R Family, V.5.00 Release 00 and the later versions. It makes source level debugging of C++ programs available.
  To debug a target program in ELF/DWARF2 format from M3T-CC32R, operate that as follows.
  (1) Init Dialog Box
  Select “CC32R(M32R)” or “CC32R(M32Rx) for “Compiler”, and ELF/DWARF2.0 for Object Format in the Debugging Information Tag.
  (2) Specifying file when loading
  Select an object file with “elf” extension.
- Renesas uITRON-specification V.4.0 real-time OS Support
  PD32R newly supports M3T-MR32R/4, the Renesas real-time OS for M32R Family, V.4.00 Release 00 and the later versions. It makes debugging of programs using M3T-MR32R/4 available.

- Others
  - The following FDD-files have been added.

MBM29DL640E.FDD	MBM29PL3200BE.FDD	MBM29PL32TE.FDD	MBM29PL32BE.FDD
MBM29PL65LM.FDD	MBM29F800BA.FDD	MBM29F800TA.FDD	M5M29KB331.FDD
M5M29KT331.FDD	M5M29KB331_WP.FDD	M5M29KT331_WP.FDD	M5M29KB641AVP.FDD
M5M29KB641AVP.FDD	M5M29KT641AVP.FDD	MX29LV800T.FDD	MX29LV800B.FDD
S29GL128N.FDD	S29PL032J.FDD	S29PL064J.FDD	

  - The following MCU-file has been added.

32192.mcu

7.3. PD32R V.4.10 Release 1

In this version, the following changes have been made to the previous version PD32R V.4.00 Release 1.

7.3.1. Revisions of Restrictions

- A limitation has been corrected: A member of a struct or union may not correctly be referenced. If you try referencing it, the debugger will unsuccessfully terminate in some cases.
  (for details, refer the RENESAS TOOL NEWS, November 1, 2003
  (RSO-M3T-PD32RSIM-031101D))
- A limitation has been corrected: If the Memory window remains minimized immediately after launching the debugger, restoring or maximizing it causes the debugger to terminate unsuccessfully.
  (for details, refer the RENESAS TOOL NEWS, December 1, 2003 (RSO-M3T-PD32RM-031201D))

7.3.2. Extended Functions and Modified Specifications

- Window-related Functions
  - Trace Window
    - A function has been added which displays the trace measurement results in mixed format with two or more display modes.
    - A function has been added which displays the trace measurement results distinguished by using different colors.
  - MR Window
    - A function has been added which allows the state of the following objects to be displayed in the MR window.
      Message buffers, Rendezvous ports, Mail-boxes with priority
    - A function has been added which allows the state of the objects to be displayed in the MR window during the target program running.
  - Script Window
    - ADDPATH command is added. This command adds the search path.

7.4. PD32R V.4.00 Release 1

In this version, the following changes have been made to the previous version PD32R V.3.10 Release 1 and PD32R V.3.10 Release 1A.

7.4.1. Revisions of Restrictions

- A limitation has been corrected: When SYSROF-formatted files are downloaded, the program may go into an infinite loop, causing the products concerned not to respond.
  (for details, refer the MAEC TOOL NEWS, December 16, 2002
  (MAECT-M3T-PD32RSIM_1-021216D))
- A limitation has been corrected: If the downloading of target programs described in ELF/DWARF format is canceled in progress, the debugger may be terminated forcefully.
  (for details, refer the MAEC TOOL NEWS, July 16, 2002 (MAECT-M3T-PD32RSIM-020716D))

7.4.2. Extended Functions and Modified Specifications

- Window-related Functions
  - Memory Window
    - Memory Window, RAM Monitor Window and Dump Window have been integrated into a new Window.
    - Memory contents can be modified by using In-Place edit function.
    - The modified data are displayed hi-lighted with color.
    - The splitter view has become available.
    - The column numbers can be modified (1-256).
    - Memory contents can be saved in the file as a text file.
  - ASM Watch Window
    - Memory contents, symbols, radixes and data length can be modified by using In-Place edit function.
    - The modified data are displayed hi-lighted with color.
    - Data can be sorted by each column.
  - C Watch Window
    - C Watch Window, Local Window, File Local Window, and Global Window have been integrated into a new window.
    - The display style has changed to list variable names and values.
    - Memory contents can be modified by using In-Place edit function.
    - The modified data are displayed hi-lighted with color.
  - Program / Source Window
    - Back scroll in Dis-Assemble Mode has become available.
  - Data Access Break Window
    - Window name has changed form “Chip Breakpoint Setting Window” to “Data Access Break Window”.
    - Window has been newly designed.
  - PC Break Window
    - Window has been newly designed.
  - H/W Breakpoint Setting Window, Trace Point Setting Window, Time Measurement Window
    - Window has been partly altered in design.
  - Download Behavior Tab on the “Init” dialog box
    - It can be specified whether the target MCU is reset before downloading.
    - The script file to be executed can be specified before downloading.
- Others
  - The function, to output the information for technical support, has become available.
  - The script command called "OpenWindow" has been added to open a specified window from the Script Window.
  - The file, which is opened in Program/ Source window, can be opened within the HEW, when PD32R started up as the external debugger of HEW.
  - The following FDD-files have been added.

MBM29LV320BE.FDD	MBM29LV320TE.FDD	MBM29LV640UE.FDD	MBM29LV800BA.FDD
MBM29LV800TA.FDD	MX26L6420.FDD	MX29LV160B.FDD	MX29LV160T.FDD
MX29LV320B.FDD	MX29LV320T.FDD		

  - The following MCU-file has been added.

32176.mcu

  - C++ debugging functions have been available.
  - ResetMask script command has been made to function correctly.

7.5. PD32R V.3.00 Release 1, PD32R V.3.00 Release 1A

In this version, the following changes have been made to the previous version PD32R V.2.10 Release 1.

7.5.1. Revisions of Restrictions

- A limitation has been corrected: If a Windows application is launched or any of the other already-opened Windows applications is made active while you are downloading a target program (a load module), the debugger may freeze suddenly.
  (for details, refer the MAEC TOOL NEWS, December 16, 2001
  (MAECT-M3T-PD32RSIM-011216D))
- A limitation has been corrected: The Source window may not be opened or not display materials normally if opened.
  (for details, refer the MAEC TOOL NEWS, December 16, 2001
  (MAECT-M3T-PD32RSIM-011216D))

7.5.2. Extended Functions and Modified Specifications

- Window-related Functions
  - The user interfaces for event setting of the H/W Break Point and Trace Point has been reformed.
    - The previous H/W Break Point Setting Dialog Box and the previous State Transition Break Window has been unified to a new H/W Break Point Setting Window.
    - The previous Trace Point Setting Dialog Box and the previous State Transition Trace Window has been unified to a new Trace Point Setting Window.
    - The drag-and-drop has become available to make usability better.
    - The windows and dialog boxes of PD32R have been resized smaller.
  - Program/Source Windows
    - It facilitates editing the source file on the window.
    - The MIX mode display can be stored to text files.
    - The way to specify the source file name in the Source Dialog Box has been improved.
  - Memory Window
    - The display start position can be automatically changed as the stack pointer moves.
  - ASM Watch Window
    - Watch points can be also displayed in signed decimal
    - The Refresh Button has been added. You can update the display of the memory contents.
- Others
  - This software has become compatible with the 32104 Group, 3218x Group.
  - The MCU files have been renewed.
  - The Drag-and-drop function
    With the drag-and-drop operations, you can load files, set events, set the display start position, add watch points, set or move data, and so on.
  - Auto Completion for the Address Setting.
    When you enter some characters for the label string in the address setting combo-boxes, the characters are completed to a label string that corresponds.
  - Buttons on the Toolbars
    - The buttons on the toolbars has been resized smaller and changed to the icons.
    - You can select styles (Flat style/Text labels/ etc.) of buttons.

7.6. PD32R V.2.10 Release 1

In this version, the following changes have been made to the former version PD32R V.2.00 Release 2.

7.6.1. Revisions for Restrictions

- The following problem has been fixed:

(1) Time in real-time tracing may be displayed as 00"00'00:000.000.
Time information can be viewed in the following window and commands:
- the Trace window
- the TraceData command
- the TraceList command

(2) Measurement results in the Time Measurement Window may also be displayed as 00"00'00:000.000.

(for detail, refer the MAEC TOOL NEWS, April 1, 2001 (MAECT-PD32R-010401D))

- The FDD-files (M5M29FB160.FDD, MBM29FT160.FDD) have been modified.
(for detail, refer the MAEC TOOL NEWS, April 1, 2001 (MAECT-PD32R-010401D))
- The FDD-files (MBM29DL32XTE.FDD, MBM29DL32XBE.FDD) have been modified.
(for detail, refer the MAEC TOOL NEWS, April 16, 2001 (MAECT-PD32R-010416D))
- The following problem has been fixed: When you watch the C variables in C watch window with the following all conditions, PD32R will be terminated forcibly.
(1) the variable is local or file local variable.
(2) you cast it to the typedefed type.
(3) the variable is not in the current scope.
(for detail, refer the MAEC TOOL NEWS, August 1, 2001 (MAECT-PD32RSIM-010801D))

7.6.2. Extended Function

- M32100T2-SDI-E has been available
- The following FDD-files have been added.

AT49BV1614.FDD	MBM29BL160D.FDD	MBM29BL161D.FDD	MBM29BL162D.FDD
MBM29DL16XBE.FDD	MBM29DL16XTE.FDD	MBM29LV160BE.FDD	MBM29LV160TE.FDD
E28F320J5.FDD	E28F640J5.FDD	TC58FVB160.FDD	

- The following MCU-files have been added.

M32171F2VFP_MCU.mcu	M32174F3VFP_MCU.mcu	M32174F4VFP_MCU.mcu
M32171F2VFP_MPU.mcu	M32174F3VFP_MPU.mcu	M32174F4VFP_MPU.mcu
M32171F2PTC_MCU.mcu	M32174F3PTC_MCU.mcu	M32174F4PTC_MCU.mcu
M32171F2PTC_MPU.mcu	M32174F3PTC_MPU.mcu	M32174F4PTC_MPU.mcu

7.7. PD32R V.2.00 Release 2

In this version, the following changes have been made to the former version PD32R V.1.00 Release 1.

7.7.1. Revisions of Restrictions

- A limitation has been corrected: When a program is downloaded to the internal or external flash memory with LPT selected as the communication interface, download may not terminate correctly. (for details, refer to the MAEC TOOL NEWS (MESCT-PD32R-010116D))
- The following problem has been fixed: When a software breakpoint is set at the built-in flash memory area with the target board and the emulator (M32120T-SDI) connected through in-circuit connection, the software breakpoint may not be cleared.
- The following problem has been fixed: COME command fails to be executed in ROM area.
- The following problem has been fixed: Values of the BPC register is not displayed in the execution results of Register command.
- The following problem has been fixed: When a chip breakpoint is set with the target board in operation, the chip breakpoint does not function correctly.

7.7.2. Modified Specification

- The method for accessing memory when acquiring object code from memory during disassemble processing has been changed.
(Previous version) Fixed to bytewise access
(New version) Any access method--bytewise, halfwordwise, or wordwise--can be selected that is supported for the target memory area.

7.8. PD32R V.2.00 Release 1

7.8.1. Revisions of Restrictions

- A limitation has been corrected: If any structure whose member names exceed 1,024 characters in total is displayed on the C Watch, Global, File Local, or Local window, the debugger may be forcibly terminated.
  (for detail, refer the MESC TOOL NEWS, October 16, 2000 (MESCT-PD32RSIM-001016D))

7.8.2. Extended Function

- Window-related Functions
  - GUI Input Window
    GUI Input Window has been added. You can make a virtual key input panel on this window. This window works as virtual input port.
  - GUI Output Window
    GUI Output Window has been added. You can make a virtual output panel on this window.
  - Call Stack Window
    Call Stack Window has been added. This window displays function call information of C language.
  - Dump Window, RAM Monitor Window and Memory Window
    - You can specify display start address, when you open a Dump Window, RAM Monitor Window or Memory Window.
    - The display start address of the Dump Window, RAM Monitor Window or Memory Window is displayed on the title bar.
  - ASM watch window
    - It has been made possible to specify a data length when registering watch points by bit specification.
  - C Watch Window and ASM Watch Window
    - You can specify where C and ASM watch point file is saved.
    - You can save C and ASM watch points by each project.
  - Script Window
    - Command history can be saved. When you type up-arrow or down-arrow key on the input field in focus, commands in the history can appear in order.
    - RELOAD command has been added. This command reloads your last target program.
  - PD Window
    - You can switch the display of the toolbar on or off.
  - PC Break Window
    - A PC break window has been added, from which pre-execution PC or post-execution PC breakpoints can be set and inspected.
  - Hardware breakpoint setup dialog box, trace point setup dialog box, state transition break window, state transition trace window, and time measurement window
    - It has been made possible to set a data information output address range during data trace.
- Others
  - Customizing User Interfaces
    Shortcut key assignment and toolbar customizing functions have been added.
  - Shortcut menu
    Right click on each window displays its own option menu as a shortcut.
  - Supplemental Download Function for Binary Data
    After downloading an absolute module file, you can download supplemental binary data (MOT files) with keeping symbol debugging information.
  - Saving window information and Resuming
    Size, location and the other information of each window resume at opening each window. This

resuming function has been made possible to work not only at starting PD32R but also while the PD32R in operation.

- Listing of All Labels in Address Setting Field
  All labels are listed in each address setting fields. When you set a label for an address, you can select it from the list.
- Online Help
  Online help has been changed to HTML Help.
- Downloading into an external flash ROM area
  It has been made possible to download the target program into an external flash ROM area. Information on this external flash ROM must be registered from the Init dialog box using its Target Dependence Memory setup page.
- Changing trace point or breakpoint settings during target execution
  It has been made possible to change trace point or breakpoint settings while executing the target.
- Changing memory contents of an internal flash ROM area
  It has been made possible to change memory contents of an internal flash ROM area by other means as well as download processing.
- C compiler CC32R V.3.00
  The debugger now supports enhanced #pragma of the C compiler CC32R V.3.00.

7.8.3. Modified Specification

- Window-related Functions
  - Source Window
    - Up to 30 Source Windows can be opened.
  - Dump Window and Memory Window
    - Up to 30 Dump/Memory windows can be opened.
  - Script Window
    - Script files can be nested to 10 levels.
    - Up to 256 macro variables can be defined in a script file.
  - Customize Dialog Box
    - Customize Dialog Box has changed to Property sheet. Settings for customizing (settings of shortcut keys, download, fonts, path, tools and the others) are unified into one dialog box.
- The Others
  - Download History Function
    - You can specify the number of histories, which have been downloaded, from 1 to 16.
  - Changes of Appearances
    - Appearances of the buttons on the toolbar of PD Window have been changed.
    - Configurations of the menu has been partly changed.
    - Appearances of Upload dialog box and Save Disasm Dialog box have been changed.
  - CB
    - The menu item for downloading a file is added.
    - Some functions added to PD have become available.
  - Analyzing realtime trace results
    - A limitation has been corrected: When displaying realtime trace results in bus mode, meaningless data are displayed for portions of trace data where a break occurred.
    - A limitation has been corrected: If the program is made to break at other than a post-execution PC breakpoint, unexecuted instructions are displayed.

8. License Agreement

IMPORTANT

This contract is a legally valid agreement concluded regarding our software products between the purchaser (limited to corporations) and Renesas Solutions Corporation. This contract is assumed to have been effected upon installation of the software product by the purchaser, an act by which the purchaser is assumed to have accepted the conditions set forth herein.

Software User License Agreement

The purchaser (hereafter called the "Purchaser") and Renesas Solutions Corporation (hereafter referred to as "Licensor") do hereby agree to the terms and conditions as specified in this Software User License Agreement (hereafter referred to as "Agreement") concerning the enclosed software and its explanatory manuals.

ARTICLE 1. Definition of Terms

1. The terms used in this contract shall be construed as defined below.
   (1) The "Software Product" refers to the software product provided by Licensor (product name: M3T-PD32R as called by Licensor) that is comprised of the following:
   (a) The "Program" refers to the program that has the functions to control the Licensor's emulator system.
   (b) The "Manual" refers to technical data (including user's manuals, etc.) associated with the program, which are provided by means of electronic documents or printed material.
   (2) The "Emulator" refers to the Licensor's emulator systems whose type numbers are given below.
   ・ M32100T2-SDI-E, M32120T-SDI, M32100T-SDI-E, M32170T-SDI, M32310T-SDI-E, M32310T-SDI
   (3) The "Designated System" refers to the computer system managed and owned by the Purchaser, in which the Software Product is installed and run.

Article 2. Granting of License

1. Licensor grants the Purchaser the following non-transferable, non-exclusive rights free of charge:
   (1) To install the Software Product in the Designated System for the purpose of controlling the Emulator. However, no limitations are imposed on the quantity of the Software Product that the Purchaser can use at the same time.
   (2) To print the electronic documents included with the Manual to a printing device for the purpose of using the Software Product in conformity with paragraphs (1) above.
   (3) The Purchaser can duplicate the Software Product to produce one and only one copy of it for backup purposes.

2. When the Purchaser has installed or duplicated the Software Product in accordance with the foregoing, the Purchaser shall keep an appropriate record describing the number of duplicates of all of the Software Product owned, the location where they are stored, and the Designated System in which the Software Product was installed. When requested by Licensor, the Purchaser must promptly disclose said record to Licensor.
3. For only the rights explicitly stipulated under this contract, Licensor grants use of the Software Product to the Purchaser. Except the rights for the Software Product that are expressly granted

under this contract, Licensor does not grant the Purchaser the license or the right of using or utilizing anything based on Licensor's patent rights, utility models, design rights, trademark rights, copyrights, semiconductor circuit arrangement utilization rights, and trace secrets.

Article 3. Limitations

1. Unless granted under this contract, the Purchaser cannot transfer the right of using the Software Product under this contract, nor can the Purchaser use, duplicate, transfer, rent or otherwise dispose the Software Product or grant sublicenses to any third parties. However, if handling of the Software Product in ways other than granted under this contract is wished by the Purchaser and Licensor recognizes it as necessary, such handling may be determined separately from this contract by consultation between the two parties.
2. The Purchaser cannot remove copyright indications from the Software Product and its duplicates.
3. The Purchaser cannot reverse-engineer, decompile, or disassemble the Software Product.
4. The Purchaser cannot print the electronic documents included with the Software Product to a printing device in an attempt to use printout for commercial purposes.
5. The provisions set forth in this article remain effective even after this contract terminates.

Article 4. Rights to the Software Product

1. All copyrights to the Software Product belong to Licensor. No articles and clauses in this contract convey the whole or part of said copyrights to the Purchaser.
2. The provisions set forth in this article remain effective even after this contract terminates.

Article 5. Support

1. Regarding the Software Product, Licensor provides technical support to the Purchaser in the manner deemed appropriate by Licensor.
2. When the Purchaser wishes to upgrade the Software Product, the Purchaser will be notified of upgrading procedures separately from this contract through Licensor's home page or by other means deemed appropriate by Licensor. Licensor may claim payment for the cost needed for upgrading from the Purchaser.

Article 6. Exemption Clause for Licensor

1. What is stipulated in Article 5 of this contract is the only responsibility Licensor shall assume under this contract. Article 5 only explicitly stipulates the responsibility of Licensor under this contract, so that whatever damages the Purchaser may suffer from the Software Product or use of it by the Purchaser, Licensor will not provide the Purchaser with any guarantee or any warrant at all. It is expected that the Purchaser assumes responsibility and bears the cost for problems that may occur with respect to the Software Product.
2. The provisions set forth in this article remain effective even after this contract terminates.

Article 7. Secrecy

1. Regarding the Software Product and this contract, the Purchaser shall keep in secret the information that has been disclosed to the Purchaser by Licensor after designating it to be secret (which includes the Software Product, hereafter called the "Secret Information") and shall not disclose or leak the whole or part of it to any third parties. It can only be used to control the Licensor's emulator system, and not for any other purpose.
2. The forgoing obligation does not apply to the following:
   (1) The information that the Purchaser already owned when it received the Secret Information
   (2) The information that was already known when the Purchaser received the Secret Information

(3) The information that became known for reasons for which the Purchaser is not responsible after the Purchaser received the Secret Information
(4) The information that the Purchaser originally developed without any references to the Secret Information
(5) The information that the Purchaser is requested to disclose by administrative agencies or courts of law. In this case, however, the Purchaser shall, prior to disclosure, inform Licensor in writing in order to provide Licensor with opportunities to make a compliant against the said disclosure.

3. The provisions set forth in this article remain effective for three years after this contract terminates.

Article 8. Contract Period and Termination

1. This contract becomes effective at the time the Purchaser has installed the Software Product and remains effective until it terminates for reasons stipulated below.
2. When the Purchaser terminated the right of use under this contract by notifying Licensor of it in writing one month earlier.
3. When the Purchaser violates one of the clauses in this contract, and said violation remains uncorrected more than 30 days after the Purchaser received a written notice from Licensor requesting that said violation be corrected.
4. When the Purchaser or Licensor falls under the application of any one of the following:
   (a) When the Purchaser or Licensor received a petition for attachment, provisional attachment, provisional disposition, compulsory execution, or public auction, or a petition for the commencement of bankruptcy, special liquidation, civil resuscitation, corporate liquidation, or company reorganization and rehabilitation procedures, or Purchaser or Licensor themselves plead for the above.
   (b) When the Purchaser or Licensor received an administrative disposition from the competent authorities to the effect that its business be closed or its business license or business registration be canceled.
   (c) When the Purchaser or Licensor adopted a resolution to discontinue or change business or dissolve the company.
   (d) When the Purchaser or Licensor received a disposition from a relevant clearinghouse to the effect that its transactions of bills in that clearinghouse be stopped.
   (e) When the Purchaser or Licensor committed a breach of faith, has had its financial situation worsened, or had a good reason to justify the doubt about that.
5. Notwithstanding the above provisions, even when this contract has terminated, if any different period is stipulated in one of the clauses of this contract, it shall have priority.

Article 9. Obligations after Termination of This Contract

1. When this contract has terminated, the Purchaser must discard the Software Product, the duplicates of the Software Product created based on this contract, and all instances of the Software Product installed in the Designated System within 15 days from the date of termination. When requested by Licensor, the Purchaser shall supply a document attesting to that effect to Licensor within one month after the request.

Article 10. Other

1. Matters not stipulated in this contract and doubts arising between the Purchaser and Licensor shall be settled by consultation between the two parties.
2. If an attempt to solve the foregoing by mutual consultation fails, giving rise to a dispute between the Purchaser and Licensor, it shall be solved through a legal procedure before a court that is designated as the competent court by Licensor.

3. The provisions set forth in this article remain effective even after this contract terminates.

LICENSEE ACKNOWLEDGES THAT LICENSEE HAS READ THIS AGREEMENT AND AGREES TO ALL TERMS AND CONDITIONS STATED HEREIN.